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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,037	02/15/2002	Adrian L Gray	4634/0K253USO	9316

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EXAMINER
VERBITSKY, GAIL KAPLAN

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 12/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
10/069,037	Gray
Examiner	**Art Unit**
Gail Verbitsky	2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Feb. 25, 2002*

2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-16 and 18-21* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideratio

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-16 and 18-21* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examine

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 1-2, 5-8, 11, 18-21 are objected to because of the following informalities:

Claim 1: --an--should be added before "additional" in line 2 for a proper antecedent basis,

--a-- should be added before "particulate" and "boric acid powder" in line 4 for a proper antecedent basis,

Claim 2: --the-- should be inserted before "low" in line 3 for a proper antecedent basis,

Claim 5: perhaps applicant should add --said-- before "refractory" in line 1 for a proper antecedent basis,

Claims 6 -7, 19: perhaps applicant should add --powder-- after "acid" in line 1 for a proper antecedent basis,

Claim 8: "the boric acid content" and "the borosilicate content" in lines 1- 2 lacks antecedent basis,

Claim 14: "both tubes" in line 3 lacks antecedent basis,

Perhaps --material-- should be inserted after "refractory" in order to clearly describe the invention,

Claim 15: "the constriction process" in line 2 and "the annealing process" in line 3 lack antecedent basis,

Claim 18: --a-- should be added before "particulate" and "boric acid powder" in line 2, for a proper antecedent basis,

perhaps applicant should add --said-- before "refractory" in line 1 for a proper antecedent basis,

Claims 20-21: "the borosilicate content" in line 2 lacks antecedent basis, for a proper antecedent basis,

Claims 19-21: Perhaps applicant should insert --powder-- after "boric acid" in line 1 for a proper antecedent basis,

Claim 11 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and/ or can not depend on any multiple dependent claims. In this case, multiple dependent claim 11 depends on multiple dependent claims 6, 7, 8, 9, 10. See MPEP § 608.01(n). *Accordingly, the claim 11 has not been further treated on the merits.* Appropriate correction is required.

Claim Rejections - 35 USC § 112

2.The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 5, 7, 13, 16, 18-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this case,

Claim 1, the term "an additional" makes the claim language is confusing because it appears that only one external shielding has been described,

Claim 16: the claim language is confusing because it contains no limitations,

Claim 13: "a low temperature sintering material" in line 3 makes the claim language confusing because it is not clear if applicant intend to claim another, an additional low temperature sintering material or this is the same material as claimed in claim 1. Furthermore, please note that in the rejection on the merits, the Examiner considers it to be the same material as claimed in claim 1,

Claim 14: "as above defined" makes the claim language confusing because no sheath has been defined in claim 1 which claim 14 is dependent on,

Claim 5: is rejected as being a substantial duplication of claim 1,

Claim 7: is rejected as being a substantial duplication of claim 6,

Claim 18: is rejected as being a substantial duplication of claim 2,

Claim 19: is rejected as being a substantial duplication of claim 6,

Claim 1: The term "low temperature sintering" in claim 1 is a relative term which renders the claim indefinite. The term "low temperature sintering" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. .

Claims 2-4, 6, 8-12, 14-15, 17, 20-21 are rejected by virtue of their dependency on claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-10, 12, 14, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilp et al. (U.S. 3634190) [hereinafter Kilp] in view of Hall, Jr. (U.S. 5464485) [hereinafter Hall] and Francis et al. (4356271) [hereinafter Francis].

Kilp discloses in Figs. 1-3 a device in the field of applicant's endeavor comprising a protective sheath for a thermoelectric device (thermocouple) having two tubes made of a stainless steel material wherein, a refractory ceramics in a form of a bond (bead) is inserted between them, and then compacted (constricted) between by a rolling process. Kilp teaches a partial (low temperature) sintering and anneal of the outer tube.

Kilp does not explicitly disclose the particular refractory ceramics material, as stated in claim 1. Kilp does not explicitly disclose a tip of the thermocouple electrically connected to an insulated (mineral) thermocouple cable, the particular temperature range of drying, and the particular content/ percentage of a borosilicate and a boric acid powder in the refractory material.

Hall discloses a device comprising a sensing tip 12 in an electrical connection with a mineral insulated thermocouple cable, the device having an additional external protective shielding 18.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the thermocouple, disclosed by Kilp, so as to have a tip in an electrical connection with a mineral insulated thermocouple cable, as taught by Hall, so as to insulate the tip from the thermocouple cable as well known in the art, and thus to provide a proper operation of the thermocouple.

Francis discloses a refractory ceramics material containing a borosilicate frit (particles) and a boric acid powder. The material is heated at low temperature without melting (low temperature sintering) and dried at temperature of approximately 110^0C.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the refractory ceramics disclosed by Kilp with a refractory ceramics comprising a borosilicate particles and a boric acid powder, as taught by Francis, because both of them are alternate types of refractory ceramic material which will perform the same function of protecting thermocouple wires, if one is replaced with the other.

With respect to claim 6, 7 and 8, 19, 20, 21: the particular content of the boric acid powder, i.e., 3-5 percent, as stated in claims 6-7, 19 and a half of the borosilicate content, absent any criticality, is only considered to be the "optimum" content, that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine

experimentation based, among other things, on the temperature to be measured and the environment the device is to be used. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

With respect to the particular temperature range, i.e., 135-150^{0}C, as stated in claim 10: the particular temperature range, claimed by applicant, absent any criticality, is only considered to be the "optimum" temperature range, that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the manufacturing process to make the device, etc. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kilp, Hall and Francis as applied to claims 1-10, 14, 18-21 above, and further in view of AU 9712601A [AU] .

Kilp, hall and Francis disclose the device as stated above in paragraph 5.

They do not explicitly teach that the annealing process follows the constriction

AU teaches to fill a sheath with a refractory material, reduce the diameter (constrict) and then anneal the sheath.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and process of it making, disclosed by Kilp, Hall and Francis, so as to make the annealing follow the constriction, as taught by AU, so as to reinforce the optimal physical properties of the device and make the device less britt and less susceptible to a damage related to a temperature, pressure, or a harsh environment.

Allowable Subject Matter

7. Claim 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices.

9. It is not possible to apply the prior art of record to claims 11 and 16 due to the reasons stated above in paragraphs 1 and 3.

10. Any inquiry related to this communication should be directed to the Examiner Verbitsky who can be reached at (703) 306-5473 Monday through Friday 7:30 to 4:00 ET.

Any inquiry of general nature should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

GKV

December 12, 2002 *Gail Verbitsky*

Patent Examiner, TC 2800